

Annex 1G. Carbon Dioxide from Geothermal Power (IPCC 1B3)
to the Technical Support Document for the 2000-2011 California's Greenhouse Gas
Emissions Inventory

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Variables Used in the Emissions Estimation Equations

Values last updated on Thursday, August 01, 2013

IPCC category = 1B3 — Fugitive Emissions from Fuels - Geothermal Energy Production

► Sector = Imported Electricity : Specified Imports : Nevada : Caithness Dixie Valley (NV) >

Activity = Electricity generation - Primarily Geothermal

- Variable Name -	- Year -	- Value and Units -	- Reference -
Electricity generation - Primarily Geothermal	2000	480,734,024 kWh	TSD General
Electricity generation - Primarily Geothermal	2001	459,702,371 kWh	TSD General
Electricity generation - Primarily Geothermal	2002	471,751,000 kWh	TSD General
Electricity generation - Primarily Geothermal	2003	441,767,000 kWh	TSD General
Electricity generation - Primarily Geothermal	2004	506,783,000 kWh	TSD General
Electricity generation - Primarily Geothermal	2005	511,340,000 kWh	TSD General
Electricity generation - Primarily Geothermal	2006	500,450,000 kWh	TSD General
Electricity generation - Primarily Geothermal	2007	480,633,000 kWh	TSD General
Electricity generation - Primarily Geothermal	2008	385,577,551 kWh	TSD General
Electricity generation - Primarily Geothermal	2009	439,667,000 kWh	ARB, 2012b
Electricity generation - Primarily Geothermal	2010	871,902,000 kWh	ARB, 2012b
Electricity generation - Primarily Geothermal	2011	492,025,250 kWh	ARB, 2012b
CO2 emission factor	2000	158 g / kwh	TSD General
CO2 emission factor	2001	158 g / kwh	TSD General
CO2 emission factor	2002	158 g / kwh	TSD General
CO2 emission factor	2003	158 g / kwh	TSD General
CO2 emission factor	2004	158 g / kwh	TSD General
CO2 emission factor	2005	158 g / kwh	TSD General
CO2 emission factor	2006	158 g / kwh	TSD General
CO2 emission factor	2007	158 g / kwh	TSD General
CO2 emission factor	2008	158 g / kwh	TSD General
CO2 emission factor	2009	158 g / kwh	TSD General
CO2 emission factor	2010	73.5 g / kwh	TSD General
CO2 emission factor	2011	73.2 g / kwh	TSD General

► Sector = Imported Electricity : Specified Imports : Utah : Blundell (UT) >

Activity = Electricity generation - Primarily Geothermal

- Variable Name -	- Year -	- Value and Units -	- Reference -
Electricity generation - Primarily Geothermal	2000	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2001	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2002	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2003	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2004	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2005	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2006	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2007	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2008	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2009	144,778,000 kWh	ARB, 2012b
Electricity generation - Primarily Geothermal	2010	17,051,000 kWh	ARB, 2012b
Electricity generation - Primarily Geothermal	2011	0 kWh	ARB, 2012b
CO2 emission factor	2000	0 g / kwh	Not applicable
CO2 emission factor	2001	0 g / kwh	Not applicable
CO2 emission factor	2002	0 g / kwh	Not applicable
CO2 emission factor	2003	0 g / kwh	Not applicable

Variables Used in the Emissions Estimation Equations

Values last updated on Thursday, August 01, 2013

CO2 emission factor	2004	0 g / kwh	Not applicable
CO2 emission factor	2005	0 g / kwh	Not applicable
CO2 emission factor	2006	0 g / kwh	Not applicable
CO2 emission factor	2007	0 g / kwh	Not applicable
CO2 emission factor	2008	0 g / kwh	Not applicable
CO2 emission factor	2009	30.8 g / kwh	TSD General
CO2 emission factor	2010	73.5 g / kwh	TSD General
CO2 emission factor	2011	0 g / kwh	Not applicable

► Sector = Imported Electricity : Specified Imports : Utah : Thermo No. 1 Raser (UT) >

Activity = Electricity generation - Primarily Geothermal

- Variable Name -	- Year -	- Value and Units -	- Reference -
Electricity generation - Primarily Geothermal	2000	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2001	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2002	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2003	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2004	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2005	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2006	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2007	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2008	0 kWh	TSD General
Electricity generation - Primarily Geothermal	2009	26,294,000 kWh	ARB, 2012b
Electricity generation - Primarily Geothermal	2010	48,210,000 kWh	ARB, 2012b
Electricity generation - Primarily Geothermal	2011	49,400,000 kWh	ARB, 2012b
CO2 emission factor	2000	0 g / kwh	Not applicable
CO2 emission factor	2001	0 g / kwh	Not applicable
CO2 emission factor	2002	0 g / kwh	Not applicable
CO2 emission factor	2003	0 g / kwh	Not applicable
CO2 emission factor	2004	0 g / kwh	Not applicable
CO2 emission factor	2005	0 g / kwh	Not applicable
CO2 emission factor	2006	0 g / kwh	Not applicable
CO2 emission factor	2007	0 g / kwh	Not applicable
CO2 emission factor	2008	0 g / kwh	Not applicable
CO2 emission factor	2009	0 g / kwh	TSD General
CO2 emission factor	2010	0 g / kwh	TSD General
CO2 emission factor	2011	0 g / kwh	TSD General

► Sector = In State Generation : Merchant Owned >

Activity = Geothermal power - Geothermal

- Variable Name -	- Year -	- Value and Units -	- Reference -
Geothermal power - Geothermal	2000	258,696,969,000,000 btu	Schnapp, 2008
Geothermal power - Geothermal	2001	256,020,352,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2002	249,876,909,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2003	250,759,093,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2004	253,298,967,390,000 btu	EIA, 2013a
Geothermal power - Geothermal	2005	253,914,556,960,000 btu	EIA, 2013a
Geothermal power - Geothermal	2006	249,045,291,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2007	252,531,220,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2008	250,944,475,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2009	152,283,141,380,000 btu	TSD General
Geothermal power - Geothermal	2010	252,314,817,000,000 btu	TSD General
Geothermal power - Geothermal	2011	144,181,285,750,000 btu	TSD General
Geothermal CO2 emission	2000	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2001	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2002	4.059E-03 g / btu	ARB, 2012b

Variables Used in the Emissions Estimation Equations

Values last updated on Thursday, August 01, 2013

Geothermal CO2 emission	2003	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2004	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2005	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2006	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2007	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2008	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2009	8.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2010	4.059E-03 g / btu	ARB, 2012b
Geothermal CO2 emission	2011	7.530E-03 g / btu	ARB, 2012b

► Sector = In State Generation : Utility Owned >

Activity = Geothermal power - Geothermal

- Variable Name -	- Year -	- Value and Units -	- Reference -
Geothermal power - Geothermal	2000	0 btu	Schnapp, 2008
Geothermal power - Geothermal	2001	0 btu	EIA, 2013a
Geothermal power - Geothermal	2002	24,891,255,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2003	22,078,611,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2004	22,135,251,520,000 btu	EIA, 2013a
Geothermal power - Geothermal	2005	19,782,251,270,000 btu	EIA, 2013a
Geothermal power - Geothermal	2006	20,422,786,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2007	20,494,561,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2008	19,817,537,000,000 btu	EIA, 2013a
Geothermal power - Geothermal	2009	20,223,230,000,000 btu	TSD General
Geothermal power - Geothermal	2010	17,773,761,000,000 btu	TSD General
Geothermal power - Geothermal	2011	1,721,531,629,200 btu	TSD General
Geothermal CO2 emission	2000	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2001	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2002	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2003	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2004	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2005	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2006	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2007	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2008	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2009	6.519E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2010	7.213E-04 g / btu	ARB, 2012b
Geothermal CO2 emission	2011	7.530E-03 g / btu	USEPA, 2012f